

IN THE CLAIMS:

The following is a complete listing of the claims and replaces all earlier listings and all earlier versions.

B1 1. (Previously Presented) A method for automated classification of a digital image, said method comprising the steps of:

- analyzing the digital image for the presence of a human face;
- determining a size of the located face with respect to a size of the image;
- classifying the digital image according to one of a number of shot types based on the relative size of the face with respect to the image; and
- storing the classification of the digital image as metadata associated with the digital image.

2. (Currently Amended) A method according to claim 1, wherein the digital image is classified using a shot type term which provides information about an intention of a photographer who captured the image.

3. (Previously Presented) A method according to claim 1 or 2, wherein the image is classified as a far-shot if the size of the located face is substantially less than the size of the image.

4. (Currently Amended) A method according to claim 1 or 2, wherein the image is classified as a ~~closeup~~ close-up where the size of the located face substantially corresponds with the size of the image.

5. (Previously Presented) A method according to claim 1 or 2, wherein the image is classified as an extreme close-up where only a part of the located face appears within the image.

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6. (Previously Presented) A method according to claim 1 or 2, wherein said classifying step comprises associating a size of the located face with a set of predetermined thresholds for a size of a human face image.

7. (Previously Presented) A method according to claim 1 or 2, wherein the image is classified as a far shot if the image contains a face and the size of the located face is below a first predetermined threshold compared to the size of the image.

8. (Currently Amended) A method according to claim 7, wherein the image is classified as an extreme close-up if the size of the located face is above a second predetermined threshold compared to the size of the image.

9. (Previously Presented) A method according to claim 8, wherein the image is classified as a close-up if the size of the located face is below the second

predetermined threshold and above a third predetermined threshold compared to the size of the image.

10. (Previously Presented) A method according to claim 9, wherein the image is classified is a medium shot if the size of the located face is greater than the first predetermined threshold and less than the third predetermined threshold.

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11. (Previously Presented) A method according to claim 1, wherein said analyzing step comprises interpreting information provided with the image.

12. (Previously Presented) A method according to claim 11, wherein the image comprises a frame of a digital video sequence of images.

13. (Previously Presented) A method according to claim 12, wherein the information is associated with other frames of the sequence.

14. (Previously Presented) A method according to claim 1, wherein said analyzing step comprises detecting one or more regions of the image at which skin colored pixels are located in order to locate the face.

15. (Previously Presented) A method according to claim 1, wherein said determining step includes approximating the size of the located face by a height and width of a bounding rectangle that encloses the face.

16. (Currently Amended) A method for automated classification of a digital image, said method comprising the steps of:

analyzing the digital image for the presence of a human face;

determining a position of the located face with respect to a frame of the image;

classifying the digital image according to one of a number of shot types based on the relative position of the face with respect to the image frame; and

storing the classification of the digital image as ~~megadata~~ metadata associated with the digital image.

17. (Previously Presented) A method according to claim 16, wherein the digital image is classified using a shot type term which provides information about an intention of a photographer who captured the image.

18. (Previously Presented) A method according to claim 16 or 17, wherein the image is classified as a highshot if the position of the located face is substantially toward a bottom of the image frame.

19. (Currently Amended) A method according to claim 16 or 17, wherein the image is classified as an eyelevel shot where the position of the located face substantially corresponds with a center of the image frame.

20. (Previously Presented) A method according to claim 16 or 17, wherein the image is classified as a low shot where the position of the located face is substantially toward a top of the image frame.

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21. (Previously Presented) A method according to claim 16 or 17, wherein the image is classified as a left shot where the position of the located face is substantially toward a right hand side of the image frame.

22. (Previously Presented) A method according to claim 16 or 17, wherein the image is classified as a right shot where the position of the located face is substantially toward a left hand side of the image frame.

23. (Previously Presented) A method according to claim 16 or 17, wherein the image is classified as a low shot where the position of the located face is substantially toward a top of the image frame.

24. (Previously Presented) A method according to claim 16, wherein said analyzing step comprises interpreting information provided with the image.

25. (Previously Presented) A method according to claim 16, wherein the image comprises a frame of a digital video sequence of images.

26. (Previously Presented) A method according to claim 25, wherein the information is associated with other frames of the sequence.

27. (Currently Amended) A method according to claim 16, further comprising the steps of:

detecting an edge within ~~said~~ the image;

determining an angle of inclination between ~~said~~ the edge and an axis of the image frame; and

classifying the image as a Dutch shot where the angle of inclination is between predetermined angles of inclination.

28. (Previously Presented) A method according to claim 27, wherein the predetermined angles of inclination comprise 30 and 60 degrees.

29. (Previously Presented) A method according to claim 16, further comprising the steps of:

analyzing the image for the presence of a predetermined non-human component;

assessing the predetermined component with respect to at least one further criterion; and

where that further criterion is met, classifying the image based upon the presence of the predetermined component.

30. (Previously Presented) A method according to claim 29, wherein the predetermined component comprises a color of a distinct region of the image.

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31. (Previously Presented) A method according to claim 29, wherein the criterion comprises at least a relative motion of the predetermined component within the image.

32. (Previously Presented) A method of processing an input sequence of digital images, said method comprising the steps of:

classifying each digital image of the sequence using a method according to claim 1; and

editing the sequence using the classification to form an output sequence of digital images.

33. (Previously Presented) A method according to claim 32, wherein said editing step comprises applying an edit function to each the image of the input

sequence, those ones of the images not satisfying the edit function being omitted from the output sequence.

34. (Previously Presented) A method according to claim 32, wherein said editing step comprises establishing an editing template for the sequence, each the edit function forming a component of the template and corresponding to one of the image classifications.

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35. (Previously Presented) A method according to claim 33, wherein the edit function comprises at least one effect for application to the image, the effect being selected from the group consisting of visual effects and audible effects.

36. (Previously Presented) A method according to claim 35, wherein the visual effects are selected from the group consisting of reproduction speed variation, zooming, blurring, and color variation.

37. (Previously Presented) An apparatus for automated classification of a digital image, said apparatus comprising:

means for analyzing the digital image for the presence of a human face;

means for determining a size of the located face with respect to a size of the image; and

means for classifying the digital image according to one of a number of shot types based on the relative size of the face with respect to the image; and

means for storing the classification of the digital image as metadata associated with the digital image.

38. (Previously Presented) An apparatus according to claim 37, wherein:

(i) the image is classified as a far-shot if the size of the located face is substantially less than the size of the image;

(ii) the image is classified as a close-up where the size of the located face substantially corresponds with the size of the image; and

(iii) the image is classified as an extreme close-up where only a part of the located face appears within the image.

39. (Previously Presented) An apparatus according to claim 37, wherein

said means for classifying associates a size of the located face with a set of predetermined thresholds for a size of a human face image.

40. (Currently Amended) An apparatus according to claim 39, wherein:

(i) the image is classified as a far shot if the image contains a face and the size of the located face is below a first predetermined threshold compared to the size of the image;

(ii) the image is classified as an extreme close-up if the size of the located face is above a second predetermined threshold compared to the size of the image;

(iii) the image is classified as a close-up if the size of the located face is below the second predetermined threshold and above a third predetermined threshold compared to the size of the image; and

(iv) the image is classified is a medium shot if the size of the located face is greater than the first predetermined threshold and less than the third predetermined threshold.

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41. (Previously Presented) An apparatus according to claim 37, wherein said analyzing comprises interpreting information provided with the image.

42. (Previously Presented) An apparatus according to claim 41, wherein the image comprises a frame of a digital video sequence of images.

43. (Previously Presented) An apparatus according to claim 41, wherein said means for analyzing detects one or more regions of the image at which skin colored pixels are located in order to locate the face.

44. (Previously Presented) An apparatus according to claim 43, wherein said means for determining approximates the size of the located face by a height and width of a bounding rectangle that encloses the face.

45. (Previously Presented) An apparatus for automated classification of a digital image, said apparatus comprising:

means for analyzing the digital image for the presence of a human face;

means for determining a position of the located face with respect to a frame of the image; and

means for classifying the digital image according to one of a number of shot types based on the relative position of the face with respect to the image frame; and

means for storing the classification of the digital image as metadata associated with the digital image.

46. (Previously Presented) An apparatus according to claim 45, wherein:

(i) the image is classified as a high-shot if the position of the located face is substantially toward a bottom of the image frame;

(ii) the image is classified as a eye-level shot where the position of the face substantially corresponds with a center of the image frame;

(iii) the image is classified as a low shot where the position of the located face is substantially toward a top of the image frame;

(iv) the image is classified as a left shot where the position of the located face is substantially toward a right hand side of the image frame;

(v) the image is classified as a right shot where the position of the located face is substantially toward a left hand side of the image frame;

(vi) the image is classified as a low shot where the position of the located face is substantially toward a top of the image frame.

47. (Previously Presented) An apparatus according to claim 46, wherein said analyzing comprises interpreting information provided with the image.

48. (Previously Presented) An apparatus according to claim 46, wherein the image comprises a frame of a digital video sequence of images.

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49. (Previously Presented) An apparatus according to claim 48, wherein the information is associated with other frames of the sequence.

50. (Previously Presented) An apparatus according to claim 45, further comprising:

means for detecting an edge within the image;

means for determining an angle of inclination between the edge and an axis of the image frame; and

means for classifying the image as a Dutch shot where the angle of inclination is between predetermined angles of inclination.

51. (Previously Presented) An apparatus according to claim 37, further comprising:

means for analyzing the image for the presence of a predetermined non-human component;

means for assessing the predetermined component with respect to at least one further criterion; and

where that further criterion is met, classifying the image based upon the presence of the predetermined component.

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52. (Previously Presented) An apparatus according to claim 51, wherein the predetermined component comprises a color of a distinct region of the image.

53. (Previously Presented) An apparatus according to claim 51, wherein the further criterion comprises at least a relative motion of the predetermined component within the image.

54. (Previously Presented) An apparatus for processing a sequence of digital images, said apparatus comprising:

classification apparatus according to claim 37 for determining a shot type classification for each digital image of the sequence; and

means for editing the sequence using the shot type classification to form an output sequence of digital images.

55. (Previously Presented) An apparatus according to claim 54, wherein said means for editing comprises applying an edit function to each the image of the input sequence, those ones of the images not satisfying the edit function being omitted from the output sequence.

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56. (Currently Amended) An apparatus according to claim 55, wherein the editing comprises establishing an editing template for the sequence, each [[the]] edit function forming a component of the template and corresponding to one of the image classifications.

57. (Previously Presented) An apparatus according to claim 56, wherein the edit function comprises at least one effect for application to the image, the effect being selected from the group consisting of visual effects and audible effects.

58. (Previously Presented) An apparatus according to claim 57, wherein the visual effects are selected from the group consisting of reproduction speed variation, zooming, blurring, and color variation.

59. (Previously Presented) A computer readable medium incorporating a computer program product operable upon computer apparatus for automated classification of a digital image, said computer program product comprising:

code for analyzing the digital image for the presence of a human face;

code for determining a size of the located face with respect to a size of the image; and

code for classifying the digital image according to one of a number of shot types based on the relative size of the face with respect to the image; and

code for storing the classification of the digital image as metadata associated with the digital image.

60. (Previously Presented) A computer readable medium according to claim 59, wherein:

(i) the image is classified as a far-shot if the size of the located face is substantially less than the size of the image;

(ii) the image is classified as a close-up where the size of the located face substantially corresponds with the size of the image; and

(iii) the image is classified as an extreme close-up where only a part of the located face appears within the image.

61. (Previously Presented) A computer readable medium according to claim 60, wherein said classifying comprises associating a size of the located face with a set of predetermined thresholds for a size of a human face image.

62. (Currently Amended) A computer readable medium according to claim 61, wherein:

(i) the image is classified as a far shot if the image contains a face ~~and~~ and the size of the located face is below a first predetermined threshold compared to the size of the image;

(ii) the image is classified as an extreme close up if the size of the located face is above a second predetermined threshold compared to the size of the image;

(iii) the image is classified as a close-up if the size of the located face is below the second predetermined threshold and above a third predetermined threshold compared to the size of the image; and

(iv) the image is classified is a medium shot if the size of the located face is greater than the first predetermined threshold and less than the third predetermined threshold.

63. (Previously Presented) A computer readable medium according to claim 59, wherein said analyzing comprises interpreting information provided with the image.

64. (Previously Presented) A computer readable medium according to claim 63, wherein the image comprises a frame of a digital video sequence of images.

65. (Previously Presented) A computer readable medium according to claim 64, wherein the information is associated with other frames of the sequence.

66. (Previously Presented) A computer readable medium according to claim 59, wherein said analyzing comprises detecting one or more regions of the image at which skin colored pixels are located in order to locate the face.

67. (Previously Presented) A computer readable medium according to claim 59, wherein said determining approximates the size of the located face by a height and width of a bounding rectangle that encloses the face.

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68. (Previously Presented) A computer readable medium according to claim 59, further comprising:

code for analyzing the image for the presence of a human face;

code for determining a position of the located face with respect to a frame of the image; and

code for classifying the image based on the relative position of the face with respect to the image frame.

69. (Currently Amended) A computer readable medium according to claim 68, wherein:

(i) the image is classified as a high-shot if the position of the located face is substantially toward a bottom of the image frame;

(ii) the image is classified as an eye-level shot where the position of the face substantially corresponds with a center of the image frame;

(iii) the image is classified as a low shot where the position of the located face is substantially toward a top of the image frame;

(iv) the image is classified as a left shot where the position of the located face is substantially toward a right hand side of the image frame;

(v) the image is classified as a right shot where the position of the located face is substantially toward a left hand side of the image frame; and

(vi) the image is classified as a low shot where the position of the located face is substantially toward a top of the image frame.

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70. (Previously Presented) A computer readable medium according to claim 69, wherein said analyzing comprises interpreting information provided with the image.

71. (Previously Presented) A computer readable medium according to claim 69, wherein the image comprises a frame of a digital video sequence of images.

72. (Previously Presented) A computer readable medium according to claim 71, wherein the information is associated with other frames of the sequence.

73. (Previously Presented) A computer readable medium according to claim 72, further comprising:

code for detecting an edge within the image;

code for determining an angle of inclination between the edge and an axis of the image frame; and

code for classifying the image as a Dutch shot where the angle of inclination is between predetermined angles of inclination.

74. (Previously Presented) A computer readable medium according to claim 73, wherein the predetermined angles of inclination comprise 30 and 60 degrees.

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75. (Previously Presented) A computer readable medium according to claim 74, further comprising:

code for analyzing the image for the presence of a predetermined non-human component;

code for assessing the predetermined component with respect to at least one further criterion; and

where that further criterion is met, classifying the image based upon the presence of the predetermined component.

76. (Previously Presented) A computer readable medium according to claim 75, wherein the predetermined component comprises a color of a distinct region of the image.

77. (Currently Amended) A computer readable medium according to claim 76, wherein the ~~criteiron~~ criterion comprises at least a relative motion of the predetermined component within the image.

78. (Currently Amended) A computer readable medium incorporating a computer program product for processing an input sequence of images, comprising:

code for classifying each [[th]]e image of the sequence using the computer program product of claim 77; and

code for editing the sequence using the classification to form an output sequence of images.

79. (Previously Presented) A computer readable medium according to claim 78, wherein said editing comprises applying an edit function to each the image of the input sequence, those ones of the images not satisfying the edit function being omitted from the output sequence.

80. (Previously Presented) A computer readable medium according to claim 79, wherein said editing comprises establishing an editing template for the sequence, each the edit function forming a component of the template and corresponding to one of the image classifications.

81. (Previously Presented) A computer readable medium according to claim 80, wherein the edit function comprises at least one effect for application to the image, the effect being selected from the group consisting of visual effects and audible effects.

82. (Previously Presented) A computer readable medium according to claim 81, wherein the visual effects are selected from the group consisting of reproduction speed variation, zooming, blurring, and color variation.

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83. (Previously Presented) An edited sequence of images formed through implementation of a series of images according to any one of claims 1, 16, 37, 45 and 59.

84. (New) A method for automated classification of a digital image, said method comprising the steps of:

analyzing the digital image for the presence of a predetermined object;

determining a size of the located predetermined object with respect to a size of the image;

classifying the digital image according to one of a number of shot types based on the relative size of the predetermined object with respect to the image; and

storing the classification of the digital image as metadata associated with the digital image.

85. (New) A method according to claim 84, wherein the predetermined object is a motor vehicle or a building.

86. (New) A method for automated classification of a digital image, said method comprising the steps of:

analyzing the digital image for the presence of a predetermined object;

determining a position of the located predetermined object with respect to a frame of the image;

classifying the digital image according to one of a number of shot types based on the relative position of the predetermined object with respect to the image frame;

and

storing the classification of the digital image as metadata associated with the digital image.

87. (New) A method according to claim 86, wherein the predetermined object is a motor vehicle or a building.